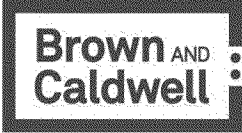


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August 22, 2016

Project Number: 149339

Mr. Gerard M.R. Martin  
Acting Deputy Regional Director  
Bureau of Waste Site Cleanup  
Massachusetts Department of Environmental Protection  
Southeast Regional Office  
20 Riverside Drive  
Lakeville, MA 02347

Subject: Notification of Phase III Remedial Action Plan,  
Response to MassDEP Comments  
Former Aerovox Facility  
740 Belleville Avenue, New Bedford, Massachusetts  
Release Tracking Number (RTN) 4-0601

Dear Mr. Martin:

On behalf of AVX Corporation (AVX), Brown and Caldwell (BC) presents this letter to notify the Massachusetts Department of Environmental Protection (MassDEP) of the submission of the Phase III Remedial Action Plan (Phase III RAP), and to respond to MassDEP's letter dated March 11, 2016 (the Letter). The Letter included MassDEP's approval of the Phase II Comprehensive Site Assessment (Phase II CSA), as well as MassDEP's identification of possible Phase II CSA deficiencies, a Request for the Phase III RAP, and an amendment to the Administrative Consent Order and an interim deadline.

The Letter, among other things, identified what it characterized as deficiencies in the Phase II CSA. The following paragraphs repeat each of the items enumerated within the Letter, followed by a BC response.

1. *AECOM's Phase II Scope of Work, which had been submitted to MassDEP on August 15, 2013 and was conditionally approved by MassDEP on September 20, 2013, stated that "[t]he tidal influence of the Acushnet River on site groundwater and contaminant transport will be investigated..." (See Phase II SOW, Page 8). However, the Phase II Report does not contain a description of the hydrologic conditions of the Acushnet River which may have impacted the distribution of Site contaminants, such as:*
  - i. *Historic flooding in New Bedford Harbor; and*
  - ii. *The elevation of the velocity zone along the sheet pile wall at the eastern boundary of the Site.*

*Response:* The original Conceptual Site Model included potential contaminant migration pathways influenced by the Acushnet River through historic flooding of the Site through drain lines beneath the Site and within Hadley Street, and through overland flow across paved areas. Both sampling of catch basin man holes and videography of the drainage system were completed in response to this CSM concern, and results of these efforts are included in the Phase II CSA report in Section 2.1.9. The pathway was retained in the CSM discussion (Phase II CSA, Section 8.2) and the conclusions acknowledge that response actions are required to address the storm sewers (Phase II CSA, Section 8.3).

The CSM also included the potential influence of the Acushnet River tidal fluctuations within the Site on the flow of groundwater and corresponding contaminant transport. A tidal study to evaluate the effect of the tides on contaminant transport was completed in September 2014 and included in the Phase II CSA, reference Section 2.1.8 and Appendix H. A hydrological study of the Acushnet River itself is integral to the New Bedford Harbor Site and is outside the scope of the Aerovox Phase II CSA.

2. *In the Phase II SOW that was conditionally approved by MassDEP, AECOM stated that “[a]dditional investigation is needed to . . . evaluate the tidal influence on groundwater and contaminant transport, evaluate contaminants effectiveness of the sheet pile wall. . .”, (See Phase II SOW, page 7). The borehole geophysics and the tidal study appear to indicate that the groundwater in the bedrock and overburden hydraulic aquifers is hydraulically connected to the surface water in the river. In addition, page 2-34 of the Phase II Report states “However, these slight gradient reversals [slightly negative gradients during low tide and slightly positive gradients during high tide] may contribute to dispersion of constituents within the aquifer. . .” Despite the fact that monitoring wells MW-15D and MW-15B contain measurable amounts of dense non-aqueous phase liquid (DNAPL), that gradient reversals were noted in this well pair, and that the depth of the sheet pile wall does not extend to the depth of these wells (31 and 45 feet below ground, respectively), the Phase II Report fails to contain any discussion of the effect of the tidal fluctuations and hydraulic gradients on DNAPL mobility, migration, and potential discharge into the river. This is a critical defect, since the DNAPL is deeper than the sheet-pile wall (see comment 3 below), and must be addressed.*

*Response:* DNAPL migration potential was evaluated using established empirical methodologies, site specific hydrogeological data, and physical DNAPL baseline properties. The evaluation was discussed in Sections 3.6 and 4.3 of the June 15, 2015 Interim IRA Status Report #4. Appendix E of IRA Status Report #4 provided additional data, calculation and graphic illustrations which further described the potential for DNAPL mobility and migration. The various IRA submittals supported categorization of the DNAPL as a mid- to late- stage plume and investigative data indicate limited areas of residual DNAPL. Because the DNAPL migration was discussed in detail in the IRA submittals, those discussions were not repeated in the Phase II, but were included by reference.

3. *In the Phase II SOW that was conditionally approved by MassDEP, AECOM stated, in reference to the depth of the sheet pile wall, that “[t]he relative effectiveness of this*

*depth and configuration in accomplishing source control and minimizing migration of contaminants from the site to the adjacent surface water needs to be evaluated.” (See Phase II SOW, Page 3). It further stated that “[t]he purpose in using the MIP is to evaluate whether NAPL is present... , evaluate interaction of potential NAPL and the sheet pile wall... [a]long the eastern property line, the MIP will assist in identifying... the potential for migration of CVOCs beneath the peat layer into which the sheet pile wall is keyed (See Phase II SOW, Page 5-6). However, the Phase II Report did not include an expanded narrative of the integrity of the sheet pile wall, which was proposed in the Phase II SOW and partially presented in Immediate Response Action (IRA) Status Report No.2. Although it is understood that the Condition of the sheet pile wall cannot be directly observed, the Phase II Report must include an engineering evaluation of the condition and effectiveness of the sheet pile wall relative to preventing contaminant migration based on:*

- i. The age, thickness, and type of material of the sheet pile wall and its likely reaction to the environment in which it exists; and*
- ii. The depth and lateral extent of the sheet pile wall relative to the locations of known contamination, particularly the DNAPL.*

*Response:* A discussion of the effectiveness of the sheet pile wall as compared to the objective of installation of the wall was included in the June 15, 2015 Interim IRA Status Report #4. Refer to Section 4.2. As noted above, the evaluation specifically was meant to consider whether the depth and configuration of the existing sheet pile wall was providing source control and minimizing migration of contaminants from the Site to the adjacent surface water. This was the original intent when it was installed in 1983, and the wall still serves in that capacity now. Furthermore, the 1984 design documentation (GHR) shows the thickness, type, lateral extent and design depth for the materials in the existing wall. The lateral extent of the wall was surveyed and shown on subsequent plans by EPA and others, up to and including the figures included in the Phase II CSA. The sheet pile wall was constructed between October 1983 and June 1984, so its age is also known.

Section 2.2.3.1 of the Phase II CSA discusses how the data confirms that the existing wall is blocking groundwater and contaminant flow in the shallow overburden aquifer above the peat. The integrity of the visible portions of the sheet pile wall also is evaluated during the annual cap inspections, which are required under the Action Memorandum and TSCA Determination. Three annual inspections have occurred since the NTCRA Endpoint was reached: 2014, 2015 and 2016. No issues with the visible sections of the sheet pile wall were identified during these inspections. Indeed, no defects were visibly observed that would indicate the wall was not functioning as intended for its original purpose, to contain shallow impacted media. In addition, as part of the IRA excavation of DNAPL source areas in the vicinity of MIP-23 and UV-17, a portion of the sheet pile wall above the peat layer will be excavated and observed. The existing sheet pile wall was never intended to address the presence, or prevent or control the migration of contaminants that exist below the peat layer in the deep overburden. Furthermore, it was never intended to serve as a permanent component of the final remedial alternative for the Site. Therefore, providing an engineering evaluation of its ability to serve these functions was not necessary or intended by the Phase II SOW.

4. *The Phase II Report did not contain updated site plans/figures depicting all the known source areas and suspected DNAPL zones based on the most current site information. Given the complexity of the Site, and the several updates to the Conceptual Site Model (CSM) since the Phase I Report was submitted, updated site plans/figures in the latest submittals should include an adequate depiction of site source areas as they are known today.*

*Response:* Figures contained within the IRA Plan Modification (AECOM, April 2016) include information relative to DNAPL source areas. In addition, the Phase III RAP, to be submitted to MassDEP by August 22, 2016 will incorporate figures identifying known source areas as a basis for assembling and evaluating potential remedial alternatives.

5. *In the Phase II SOW that was conditionally approved by MassDEP, AECOM stated that, "[b]edrock wells are needed to define the downward extent of [TCE and PCB] contamination..." (See Phase II SOW, Page 3). Although the extent of DNAPL in the overburden appears to have been adequately evaluated, the extent of DNAPL in the shallow bedrock aquifer (if any) in the vicinity of MW-15B was not addressed. Groundwater from monitoring wells MW-26B and MW-34B contain TCE at concentrations at or above 10% of the solubility limit for TCE, indicating the potential for DNAPL. DNAPL in the bedrock aquifer would be considered a source of contamination and must be addressed in the Phase II Report. In addition, the horizontal and vertical extent of the dissolved phase contamination in the bedrock aquifer has not been fully delineated and must also be addressed.*

*Response:* The horizontal limits of groundwater contamination in the shallow bedrock aquifer have been delineated (refer to the BC response to MassDEP comment number 6, below). The extent of impacts above UCLs in shallow bedrock have been estimated and illustrated in contour figures 2-8 and 2-11 of the Phase II CSA. These areas center around the confirmed DNAPL in bedrock well MW-15B, and both the IRA and the Phase III RAP remedial alternatives address this UCL and DNAPL area. Although the full vertical extent of contamination within the bedrock aquifer has not been identified (the deepest well intervals continue to show impacted groundwater), the three deepest monitoring wells at the Site, MW-32B, MW-33B and MW-34B terminated at 185 feet, 255 feet and 198 feet bgs, respectively, indicate little to no flow at depths below 159 feet, 185, and 195 feet bgs, respectively. A direct line of evidence of DNAPL was not identified during drilling or subsequent sampling of these three monitoring wells. Indirect lines of evidence (based on groundwater concentrations relative to solubility for TCE and increasing concentrations with depth) of DNAPL were encountered during the Phase II CSA.

In the absence of groundwater flow at depth, and in consideration of lines of evidence that provide a possible but not confirmed indication of DNAPL in deep bedrock, the Phase III RAP discusses the presence of contaminants in the bedrock aquifer and selects a remedy to address as potential sources the areas where concentrations are above UCLs. Bedrock concentrations are also considered along with anticipated mass flux from the bedrock aquifer to potential receptors in the Acushnet River as part of the development of remedial alternatives in the Phase III RAP.

6. *The Phase II Report states that the northern extent of contamination has not been fully delineated due to issues obtaining access to the northerly Coyne property. For a Phase II Report to be deemed administratively and technically complete, additional assessment is necessary in this area to determine the risk of harm and the need to conduct remedial actions in this portion of the Site.*

*Response:* Subsequent to completion of the Phase II CSA submittal, access to the Coyne Property was provided to AVX. One shallow bedrock monitoring well was installed on the Coyne property in November 2015, and groundwater samples were collected in December 2015 and April 2016. The results of these two sampling rounds were summarized and the analytical data was submitted in IRA Status Reports 6 and 7. TCE was detected on the Coyne property at concentrations below those observed on the Precix property, indicating that the northern edge of the shallow bedrock contamination is within the immediate vicinity of the Coyne property. Based on the risk characterization for the Site, further delineation is not required to evaluate remedial alternatives in the Phase III, and the Phase II CSA should now be considered technically and administratively complete.

If you have any questions regarding the Phase III Remedial Action Plan findings and conclusions, please contact the undersigned at 978-983-2055.

Very truly yours,

**Brown and Caldwell**



Marilyn Wade, PE, LSP  
Managing Engineer

cc: Angela Gallagher, MassDEP  
Michele Paul, City of New Bedford Department of Environmental Stewardship  
Evan Slavitt, AVX Corporation